

**DESCRIPTION:** 0.25W 3KVDC Isolated Single and Dual Output DC/DC Converters

The PKA-W25series are miniature, isolated 0.25W DC/DC converters in a SIP and DIP package. They offer the ideal solution in many space critical applications for board level power distribution. The Internal SMD construction makes it possible to offer a product with high performance at low cost. The series offers smaller size, improved efficiency, lower output ripple noise and 3KVDC isolation.

### FEATURES

|                                  |                            |   |
|----------------------------------|----------------------------|---|
| RoHS compliant, CE certification | Efficiency up to 83%       | Operating temperature: -40°C to 105°C   |
| UL 94V-0 package material        | Internal SMD construction  | Industry standard pinout  |
| Power sharing on output          | Input voltage :3.3V,5V,12V | Output voltage: 3.3V,5V,9V,12V,15V / $\pm 3.3V, \pm 5V, \pm 9V, \pm 12V, \pm 15V$ |

### SELECTION GUIDE

| Part Number   | Nominal Input Voltage | Output Voltage | Output Current (Max./Min) | Efficiency | Package Style |
|---------------|-----------------------|----------------|---------------------------|------------|---------------|
|               | V                     | V              | mA                        | %          |               |
| PKA0303DA-W25 | 3.3                   | 3.3            | 75.8/7.58                 | 75         | DIP           |
| PKA0305DA-W25 | 3.3                   | 5              | 50/5                      | 80         | DIP           |
| PKA0309DA-W25 | 3.3                   | 9              | 27.8/2.78                 | 75         | DIP           |
| PKA0312DA-W25 | 3.3                   | 12             | 21/2.1                    | 80         | DIP           |
| PKA0315DA-W25 | 3.3                   | 15             | 16.7/1.67                 | 80         | DIP           |
| PKA0303SA-W25 | 3.3                   | 3.3            | 75.8/7.58                 | 74         | SIP           |
| PKA0305SA-W25 | 3.3                   | 5              | 50/5                      | 80         | SIP           |
| PKA0309SA-W25 | 3.3                   | 9              | 27.8/2.78                 | 76         | SIP           |
| PKA0312SA-W25 | 3.3                   | 12             | 21/2.1                    | 77         | SIP           |
| PKA0315SA-W25 | 3.3                   | 15             | 16.7/1.67                 | 80         | SIP           |
| PKA0503DA-W25 | 5                     | 3.3            | 75.8/7.58                 | 78         | DIP           |
| PKA0505DA-W25 | 5                     | 5              | 50/5                      | 72         | DIP           |
| PKA0509DA-W25 | 5                     | 9              | 27.8/2.78                 | 75         | DIP           |
| PKA0512DA-W25 | 5                     | 12             | 21/2.1                    | 78         | DIP           |
| PKA0515DA-W25 | 5                     | 15             | 16.7/1.67                 | 80         | DIP           |
| PKA0503SA-W25 | 5                     | 3.3            | 75.8/7.58                 | 78         | SIP           |
| PKA0505SA-W25 | 5                     | 5              | 50/5                      | 72         | SIP           |
| PKA0509SA-W25 | 5                     | 9              | 27.8/2.78                 | 77         | SIP           |
| PKA0512SA-W25 | 5                     | 12             | 21/2.1                    | 78         | SIP           |
| PKA0515SA-W25 | 5                     | 15             | 16.7/1.67                 | 80         | SIP           |
| PKA1205DA-W25 | 12                    | 5              | 50/5                      | 75         | DIP           |
| PKA1209DA-W25 | 12                    | 9              | 27.8/2.78                 | 82         | DIP           |
| PKA1212DA-W25 | 12                    | 12             | 21/2.1                    | 82         | DIP           |
| PKA1215DA-W25 | 12                    | 15             | 16.7/1.67                 | 82         | DIP           |
| PKA1205SA-W25 | 12                    | 5              | 50/5                      | 74         | SIP           |
| PKA1209SA-W25 | 12                    | 9              | 27.8/2.78                 | 79         | SIP           |
| PKA1212SA-W25 | 12                    | 12             | 21/2.1                    | 81         | SIP           |
| PKA1215SA-W25 | 12                    | 15             | 16.7/1.67                 | 81         | SIP           |
| PKA0303D-W25  | 3.3                   | $\pm 3.3$      | $\pm 37.8/\pm 3.78$       | 75         | DIP           |
| PKA0305D-W25  | 3.3                   | $\pm 5$        | $\pm 25/\pm 2.5$          | 80         | DIP           |
| PKA0309D-W25  | 3.3                   | $\pm 9$        | $\pm 13.9/\pm 1.39$       | 74         | DIP           |
| PKA0312D-W25  | 3.3                   | $\pm 12$       | $\pm 10.5/\pm 1.05$       | 79         | DIP           |
| PKA0315D-W25  | 3.3                   | $\pm 15$       | $\pm 8.35/\pm 0.84$       | 80         | DIP           |
| PKA0303S-W25  | 3.3                   | $\pm 3.3$      | $\pm 37.8/\pm 3.78$       | 73         | SIP           |
| PKA0305S-W25  | 3.3                   | $\pm 5$        | $\pm 25/\pm 2.5$          | 80         | SIP           |
| PKA0309S-W25  | 3.3                   | $\pm 9$        | $\pm 13.9/\pm 1.39$       | 76         | SIP           |
| PKA0312S-W25  | 3.3                   | $\pm 12$       | $\pm 10.5/\pm 1.05$       | 77         | SIP           |
| PKA0315S-W25  | 3.3                   | $\pm 15$       | $\pm 8.35/\pm 0.84$       | 80         | SIP           |

## SELECTION GUIDE

| Part Number  | Nominal Input Voltage | Output Voltage | Output Current (Max./Min) | Efficiency | Package Style |
|--------------|-----------------------|----------------|---------------------------|------------|---------------|
|              | V                     | V              | mA                        | %          |               |
| PKA0503D-W25 | 5                     | ±3.3           | ±37.8/±3.78               | 78         | DIP           |
| PKA0505D-W25 | 5                     | ±5             | ±25/±2.5                  | 72         | DIP           |
| PKA0509D-W25 | 5                     | ±9             | ±13.9/±1.39               | 75         | DIP           |
| PKA0512D-W25 | 5                     | ±12            | ±10.5/±1.05               | 77         | DIP           |
| PKA0515D-W25 | 5                     | ±15            | ±8.35/±0.84               | 79         | DIP           |
| PKA0503S-W25 | 5                     | ±3.3           | ±37.8/±3.78               | 78         | SIP           |
| PKA0505S-W25 | 5                     | ±5             | ±25/±2.5                  | 72         | SIP           |
| PKA0509S-W25 | 5                     | ±9             | ±13.9/±1.39               | 77         | SIP           |
| PKA0512S-W25 | 5                     | ±12            | ±10.5/±1.05               | 78         | SIP           |
| PKA0515S-W25 | 5                     | ±15            | ±8.35/±0.84               | 79         | SIP           |
| PKA1205D-W25 | 12                    | ±5             | ±25/±2.5                  | 75         | DIP           |
| PKA1209D-W25 | 12                    | ±9             | ±13.9/±1.39               | 79         | DIP           |
| PKA1212D-W25 | 12                    | ±12            | ±10.5/±1.05               | 82         | DIP           |
| PKA1215D-W25 | 12                    | ±15            | ±8.35/±0.84               | 82         | DIP           |
| PKA1205S-W25 | 12                    | ±5             | ±25/±2.5                  | 73         | SIP           |
| PKA1209S-W25 | 12                    | ±9             | ±13.9/±1.39               | 79         | SIP           |
| PKA1212S-W25 | 12                    | ±12            | ±10.5/±1.05               | 81         | SIP           |
| PKA1215S-W25 | 12                    | ±15            | ±8.35/±0.84               | 81         | SIP           |

Add suffix "P" for continuous short circuit protection, for example PKA0505SAP-W25.

## INPUT CHARACTERISTICS

| Parameter                | Conditions          | Min. | Typ. | Max. | Units  |
|--------------------------|---------------------|------|------|------|--------|
| Voltage range            | 3.3V input variants | 2.9  | 3.3  | 3.6  | V      |
| Voltage range            | 5V input variants   | 4.5  | 5    | 5.6  | V      |
| Voltage range            | 12V input variants  | 10.7 | 12   | 13.1 | V      |
| Reflected ripple current | 3.3V input          |      | 30   | 60   | mA p-p |
| Reflected ripple current | All other           |      | 25   | 37   | mA p-p |

## ABSOLUTE MAXIMUM RATINGS

|   |          |
|---|----------|
| Short-circuit protection                        | 1 second |
| Lead temperature 1.5mm from case for 12 seconds | 300 °C   |
| Internal power dissipation                      | 540mW    |
| Input voltage $V_{in}$ , PKA03                  | 5.5V     |
| Input voltage $V_{in}$ , PKA05                  | 7V       |
| Input voltage $V_{in}$ , PKA12                  | 15V      |

## ISOLATION CHARACTERISTICS

| Parameter              | Conditions          | Min. | Typ. | Max. | Units |
|------------------------|---------------------|------|------|------|-------|
| Isolation test voltage | tested for 1 second | 3000 |      |      | VDC   |
| Resistance             | Viso= 1000VDC       | 1    |      |      | GΩ    |

All specifications typical at  $T_A=25^{\circ}\text{C}$ , nominal input voltage and rated output current unless otherwise specified.

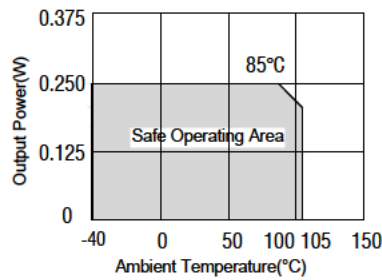
## GENERAL CHARACTERISTICS

| Parameter           | Conditions        | Min. | Typ. | Max. | Units |
|---------------------|-------------------|------|------|------|-------|
| Switching frequency | 3V input and 0503 |      | 95   |      | kHz   |
| Switching frequency | All other types   |      | 120  |      | kHz   |

## TEMPERATURE CHARACTERISTICS

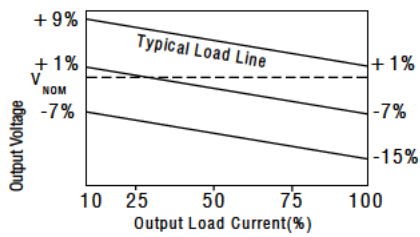
| Parameter                           | Conditions  | Min. | Typ. | Max. | Units              |
|-------------------------------------|---|------|------|------|--------------------|
| Specification                       | Derating if the temperature $\geq 85^{\circ}\text{C}$ | -40  |      | 105  | $^{\circ}\text{C}$ |
| Storage                             |   | -50  |      | 130  | $^{\circ}\text{C}$ |
| Case temperature rise above ambient | 5V output types                                       |      | 30   |      | $^{\circ}\text{C}$ |
| Case temperature rise above ambient | All other types                                       |      | 21   |      | $^{\circ}\text{C}$ |
| Cooling                             | Free air convection                                   |      |      |      |                    |

## TEMPERATURE DERATING GRAPHS

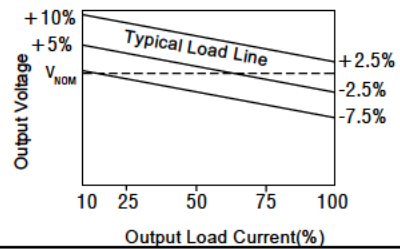


## TOLERANCE ENVELOPES

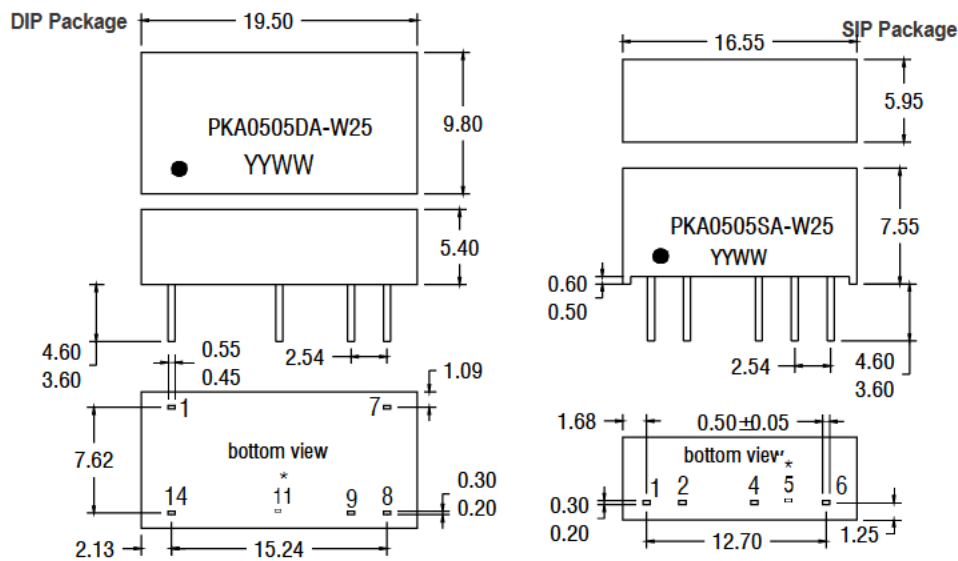
### 3.3V output types



### All other types



## MECHANICAL DIMENSIONS



## PIN CONNECTIONS

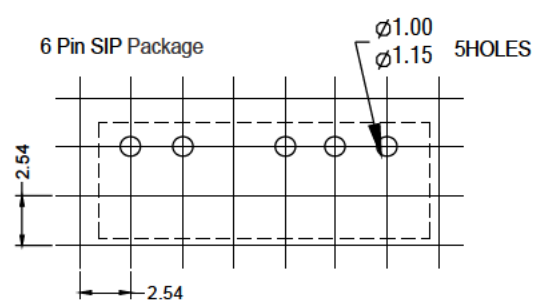
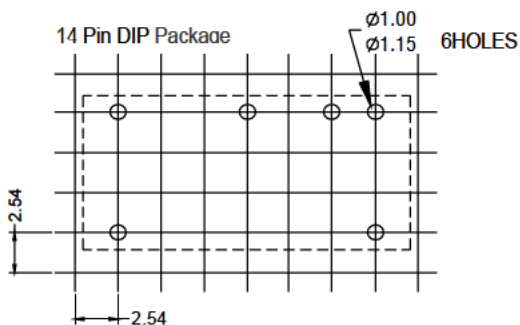
| 14 PIN DIP |          |
|------------|----------|
| Pin        | Function |
| 1          | -Vin     |
| 7          | NC       |
| 8          | OV       |
| 9          | +Vout    |
| *11        | -Vout    |
| 14         | +Vin     |

| 6 PIN SIP |          |
|-----------|----------|
| Pin       | Function |
| 1         | +Vin     |
| 2         | -Vin     |
| 4         | -Vout    |
| *5        | OV       |
| 6         | +Vout    |

\* Pin not fitted on single output variants.

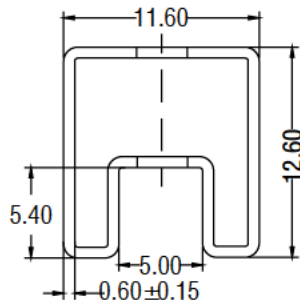
All dimensions in  $\pm 0.25\text{mm}$  All pins on a 2.54mm pitch and within  $\pm 0.25$  of true position  
weight: 1.4g(SIP) 1.9g(DIP) \* Pin not fitted on single output variants.

## RECOMMENDED FOOTPRINT DETAILS

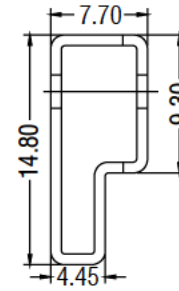


### TUBE OUTLINE DIMENSIONS

14 Pin DIP Tube



6 Pin SIP Tube



Unless otherwise stated all dimensions in mm±0.5mm

Tube length(14 Pin DIP): 520mm ±2mm

Tube length(6 Pin SIP): 525mm ±2mm

DIP Tube Quantity:30PCS

SIP Tube Quantity:30PCS

### SOLDERING INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. Both types in this series are backward compatible with Sn/Pb soldering systems.